Website Services in Pakistan

Web services are a service-oriented architecture technology that provides services through standard web protocols, aiming to ensure interoperability between application services on different platforms.

According to the W3C definition, a web service should be a software system that enables interaction between different machines on a network. Web services are typically composed of many application programming interfaces (APIs), which execute service requests submitted by clients through a network, such as a remote server on the Internet.

Although the W3C definition covers many disparate and indistinguishable systems, it generally refers to the exchange of XML-formatted messages between client-server architectures using the SOAP protocol. In both definition and implementation, during the web service process, the server provides a machine-readable description (usually based on WSDL) to identify the web service offered. Furthermore, while WSDL is not a necessary condition for SOAP server endpoints, current mainstream Java-based web service development frameworks often require WSDL to generate client-side source code. Some industry standardization organizations, such as WS-I, mandate the inclusion of SOAP and WSDL in web service definitions.

Core Definitions

Considering that no single document contains all relevant content, a modular approach can be used to describe web services, but a single, "absolutely comprehensive and accurate" definition cannot be provided. Due to the influence of external environment and implementation technology, the core definitions given by different parties may vary slightly, but generally include:

SOAP: An extensible message envelope format based on XML, which must be bound to a network transport protocol. This protocol is usually HTTP or HTTPS, but could also be SMTP or XMPP.

WSDL: An XML document used to describe the details of service port access methods and the protocols used. It is typically used to assist in generating server and client code and configuration information.

UDDI: A protocol used to publish and search for web services. Applications can use this protocol to find target web services at design time or runtime.

These standards are developed by these organizations: W3C is responsible for XML, SOAP, and WSDL; OASIS is responsible for UDDI.

Protocol Sets

To improve interoperability between web services, WS-I has also released a Web Service Protocol Set (Profile). The protocol set contains a series of core definitions

specific to each version (such as SOAP and WSDL), along with limitations and constraints on their use. WS-I has also released testing tools and related use cases for deploying protocol set-compatible web services.

WS-Series Additional Definitions

To expand the capabilities of web services, some new standards have been or are under development. These standards are usually prefixed with WS (short for Web Service). Below is a partial list of additional standards in the WS series:

WS Security

Defines how to use XML encryption or XML signing in SOAP to protect message transmission. It can be used as an alternative to or extension of HTTPS protection.

WS Reliability

A standard protocol from OASIS used to provide trusted messaging between web services.

WS Reliable Messaging

Also a protocol providing trusted messaging, released by Microsoft, BEA, and IBM. OASIS is currently working on standardizing it. WS-Addressing defines how to describe the sender/receiver address within a SOAP message.

WS Transaction defines the transaction processing method.

The W3C has historically been responsible for defining many additional WS definitions, but this role has recently come under scrutiny. Some have called on the W3C, as a builder of the web and the semantic web, to focus its efforts on the core

web itself, rather than simply rewriting web services. This demand for the W3C to cease its role as a web service definer became particularly apparent at the Enterprise Web Services Forum in February 2007. Furthermore, OASIS has implemented numerous standardization efforts for web service extensions, including the Web Services Resource Framework and WSDM.

Using Web Services

Web services are essentially a set of tools that can be invoked in various ways. The three most common methods are: Remote Procedure Call (RPC), Service-Oriented Architecture (SOA), and Representational State Transfer (REST).

Remote Procedure Call

Main article: Remote Procedure Call

Web services provide a distributed interface of functions or methods for users to call, which is a relatively traditional approach. Typically, the RPC interface is defined in the WSDL (similar to early XML-RPC).

While early web services were widely deployed using RPC, criticisms of its overly tight coupling have persisted. This is because RPC-based web services essentially use a simple mapping to directly translate user requests into functions or methods written in a specific language. Today, most service providers believe this approach is unsustainable in the future, and under their influence, the WS-I Basic Profile no longer supports remote procedure calls.